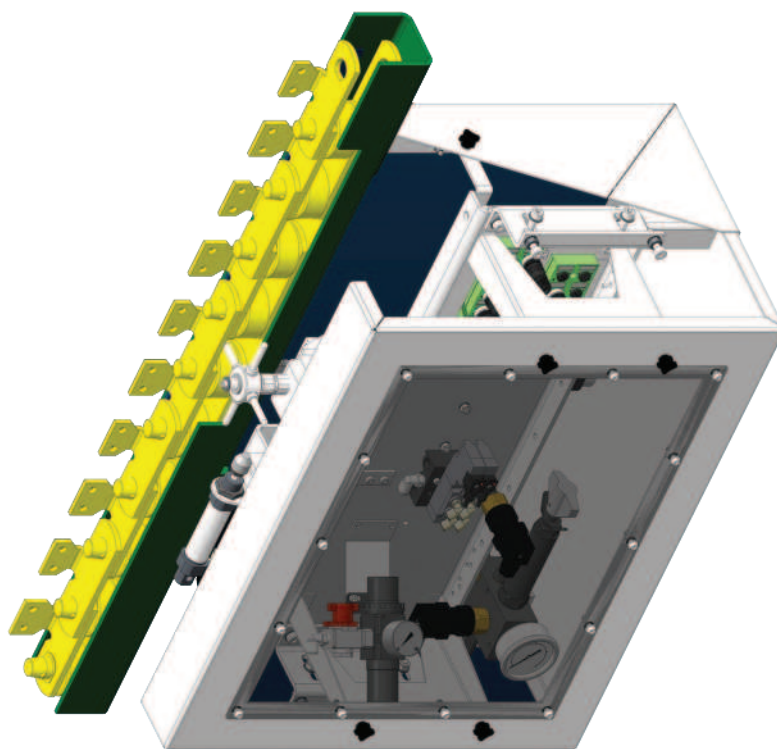


Grease injection lubrication system

GVP-S-051-01



Date of issue	July 2016
Form number	951-130-453-S051-1
Read manual prior to installation or use of this product. Keep manual nearby for future reference.	

Imprint

In accordance with the EU Machine Directive 2006/42/CE, the installation and operation instructions are an integral part of a lubrication system and must be kept close to the equipment for future reference.

The installation and operation instructions were drafted in compliance with the applicable standards and rules governing technical documentation.

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General

Meaning of symbols and corresponding information

In this manual, the symbols and safety wordings shown on this page are intended to communicate a particular risk to persons, material assets, or the environment.

All safety instructions must be respected by person exposed to these risks. The safety instructions must be communicated to all other persons.

Instructions attached directly to the equipment, such as

- rotational direction arrows
- fluid connection labels, etc.

must be respected and remain perfectly legible.

It is essential to read these instructions thoroughly and to respect the safety instructions given.

1. Safety instructions

The described product was manufactured in accordance with all generally acknowledged regulations pertaining to technology, occupational safety, and accident prevention. However, dangers that can cause physical injury to persons or damage to other material assets might still occur during the use of the product.

NOTE

These instructions must be read and understood by all persons who are involved with the installation, operation, maintenance, and repair of the product. These instructions must be kept close to the equipment for future reference.

Note that these installation instructions is an integral part of the product. It must be handed over to the new operator of the product if the product is sold.

In addition to the information provided in the installation instructions, all generally applicable regulations on accident prevention and the environment must be observed.

1.1 Intended use

The product is designed for the lubrication of moving conveyor chains. Other use or use beyond this purpose is considered unintended.

Products of SKF must not be used in conjunction with substances and mixtures classified as hazardous by the Annex I part 2-5 of the CLP regulation (EC 1272/2008), and identified with hazard pictograms GHS01-GHS06 and GHS08.

None of the products manufactured by SKF can be used in conjunction with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1013 mbar) by more than 0.5 bar at their maximum permissible temperature.

Unless otherwise noted, products of SKF must not be used in conjunction with explosive atmospheres according to the ATEX-Directive 2014/34/EU.

NOTE

All SKF products may be used strictly respecting the instructions described in this brochure or the operating instructions.

1.2 Authorized personnel

The products described in the installation instructions may only be installed, operated, maintained, and repaired by qualified experts. Qualified experts are persons who have been trained, instructed, and familiarized with the end product into which the described product is installed.

These persons are considered capable of such tasks due to their education, training, and experience with valid standards, conditions, accident prevention regulations in effect, and installation conditions. They should be able to carry out the required tasks and to recognize – and thus avoid – any dangers that might otherwise occur.

A definition of what constitutes a qualified person and who are unqualified persons are stipulated in DIN VDE 0105 and IEC 364.

1.3 Danger relating to electric current

The electrical connection for the described product may only be established by qualified, instructed persons who have been authorized by the operator or owner to carry out this task. If the product is improperly connected, substantial material or personal damage may be the consequence.

⚠ CAUTION!

Working on products that have not been disconnected from the power supply can cause serious injury or death to persons. Installation, maintenance, and repair work may only be carried out by qualified experts on products that have been disconnected from the power supply. The supply voltage must be turned off before any product components are opened.

1.4 Danger relating to system pressure

⚠ CAUTION!

Centralized lubrication systems are under pressure when they are being operated. Such systems must therefore be depressurized before starting installation, maintenance, or repair work and before making any changes to the system.

1.5 Warranty

The instructions do not contain any information on the warranty. This can be found in the General Conditions of Sales, which are available at: www.skf.com/lubrication.

2. Lubricants

2.1 General

NOTE

All SKF products must only be used for their intended purpose and in accordance with the specifications of the installation instructions for the product in question.

The intended use of this product is for the centralized lubrication/ lubrication of bearings and wear points with lubricants. All physical limitations of use stipulated in the documentation of the product such as the owner's manual, technical drawings and catalogs must be observed.

More specifically, we call your attention to the fact that substances and mixtures classified as hazardous by the Annex I part 2-5 of the CLP regulation (EC 1272/2008), and identified with hazard pictograms GHS01-GHS06 and GHS08, can only be used to feed the SKF centralized lubrication systems, transported or distributed by these systems after consultation with SKF and obtaining written permission.

All products manufactured by SKF are not approved for use in conjunction with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1013 mbars) by more than 0,5 bar at their maximum permissible temperature.

Should there be a need to use the product to convey media other than lubricants or hazardous substances, this must be discussed with SKF first and the company must give express written permission.

In the opinion of SKF, lubricants constitute a design element that must be considered when selecting components and designing centralized lubrication systems. The lubrication properties of the lubricants in question must be considered.

2.2 Selection of lubricants

NOTE

You must observe the machinery manufacturer's information on the lubricants to be used in the machinery.

NOTE

The manufacturer of the bearing or machinery to be lubricated will specify the lubricant requirements for each point to be lubricated. You must make sure that the required quantity of lubricant is provided to the relevant lubricating point. If a lubricating point is insufficiently lubricated, the bearing may become damaged or jammed.

While the machinery/bearing manufacturer usually specifies lubricants, it is the owner/operator (or maintenance person) who must finally select the appropriate lubricant, with the help of the lubricant supplier. When selecting a lubricant, the type of bearing/wear point, the stresses and strains to be expected during operation, and anticipated ambient conditions must be taken into account. All financial/economic aspects must also be considered.

Note
If required, SKF can help customers to select suitable components for the conveyance of the selected lubricant and to plan and design their centralized lubrication system.

If you have further questions, you can contact SKF.

We can test lubricants in our own laboratory to establish their suitability for conveyance (e.g. 'oil separation' behavior) in centralized lubrication systems.

You can request an overview of lubricant tests offered by SKF from our Service Center.

2.3 Approved lubricants

CAUTION!
Only lubricants that have been approved by SKF for use with the product may be used. Unsuitable lubricants can cause product malfunctions and damage to property.

CAUTION!
Different lubricants must not be mixed together. Doing so can cause damage and require extensive cleaning of the products/centralized lubrication system. To prevent confusion, we recommend that you attach information indicating the lubricant to be used on the lubricant reservoir.

The described product can be operated with lubricants that comply with the specifications in the technical data.

Note that some lubricants may have properties that lie within the permitted limit values and yet not be suitable for use in centralized lubrication systems for other reasons. For example, some synthetic lubricants are not compatible with elastomers.

2.4 Lubricants and the environment

WARNING!
Lubricants can pollute the soil and water. Lubricants must be used and disposed of in compliance with the rules. Instructions and local regulations must be observed when handling lubricants.

Note that lubricants are harmful to the environment and flammable; their transportation, storage, and processing are subject to special precautionary measures. For specifications on transportation, storage, processing, and dangers to the use and the environment for the lubricant, refer to the material safety data sheet provided by or available from the lubricant manufacturer. You can ask the manufacturer of the lubricant for the material safety data sheet.

2.5 Danger relating to lubricants

CAUTION!
Centralized lubrication systems must be absolutely leak-free. Leaking centralized lubrication systems can cause a slip hazard. When performing installation, maintenance, and repairs test the centralized lubrication system for leaks. Leaky parts of the centralized lubrication system or components of the lubrication equipment have to be sealed immediately.

Leaking centralized lubrication systems or components of the lubrication equipment are a source of danger in relation to slip hazard and the risk of injury. These dangers can cause physical injury to persons or damage to other material assets.

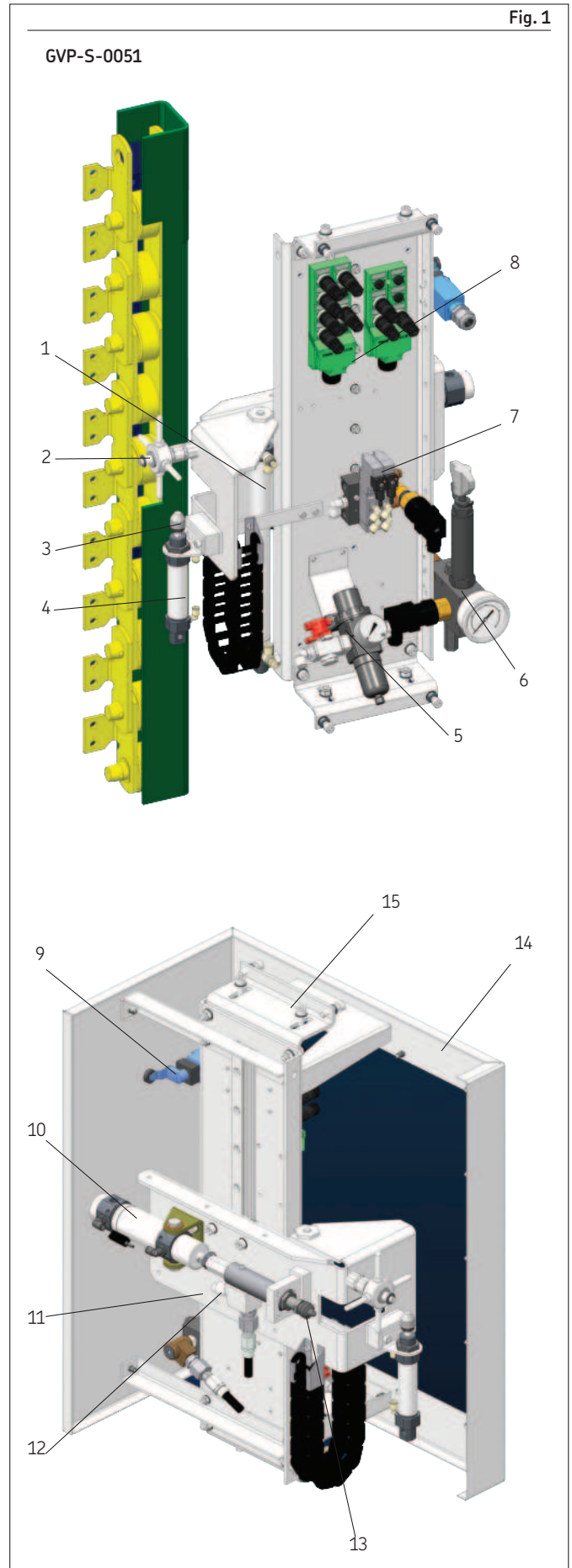
Refer to safety precautions in the lubricant manufacturer's material safety data sheet.

Lubricants are hazardous substance. It is essential to respect any safety instructions given in the lubricant safety data sheet. You can ask the manufacturer of the lubricant for the material safety data sheet.

3 Construction and operation

3.1 Construction

A GVP grease injection lubrication system includes all the mechanical, hydraulic, pneumatic and electrical components required to lubricate moving conveyor chains.

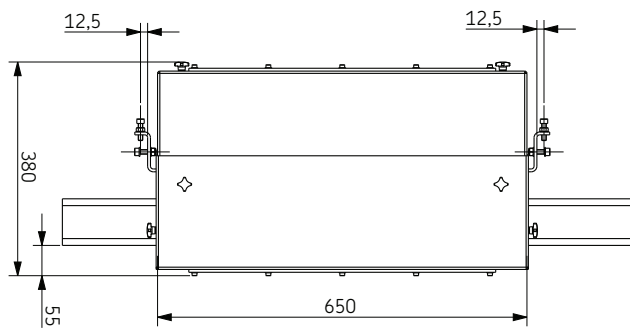


Legend GVP-S-0051

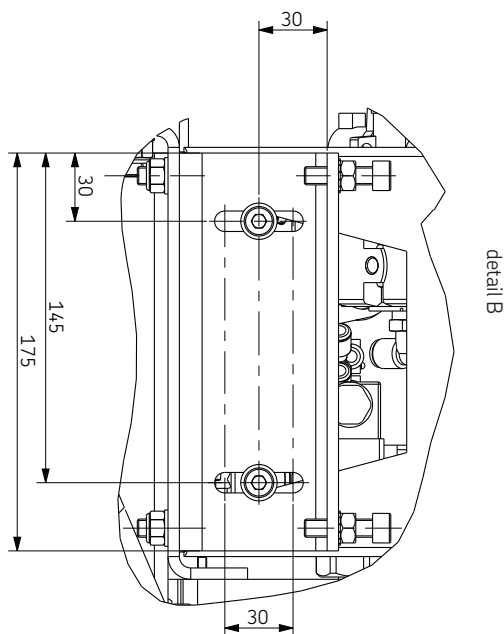
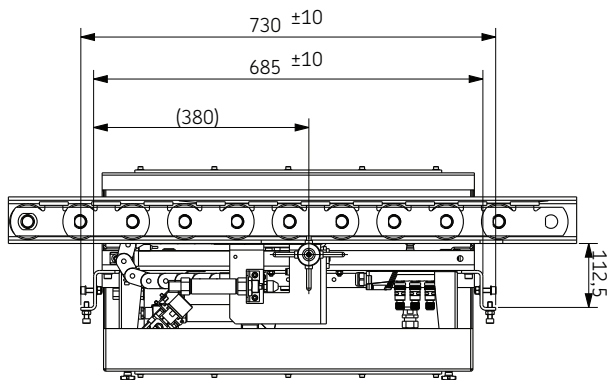
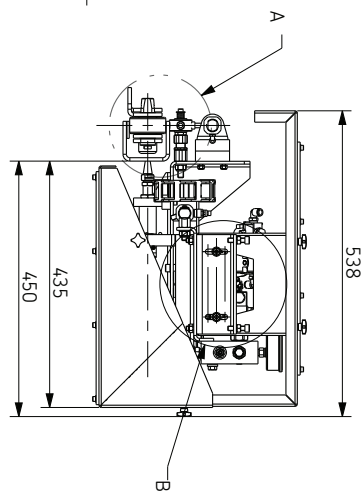
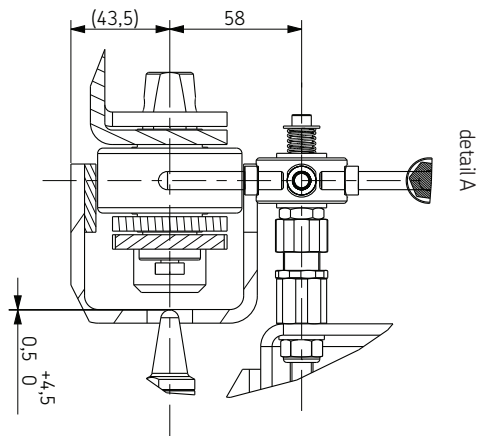
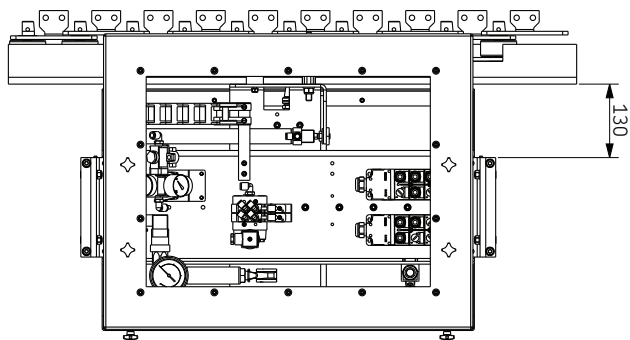
- 1 Carriage return cylinder
- 2 Capstan
- 3 Stop
- 4 Stop cylinder
- 5 Air treatment unit (pressure gauge, pressure regulator, filter)
- 6 Lubricant treatment unit (pressure gauge, pressure switch, pressure regulator)
- 7 Control solenoid valves
- 8 Electric connection to the control unit
- 9 Safety end switch
- 10 Injector cylinder
- 11 Injector carriage
- 12 Analog pressure sensor (for VisioLub*)
- 13 Injector
- 14 Protection cover
- 15 Fixing frame

* If available

Dimensions GVP-S-051-01



chain movement direction



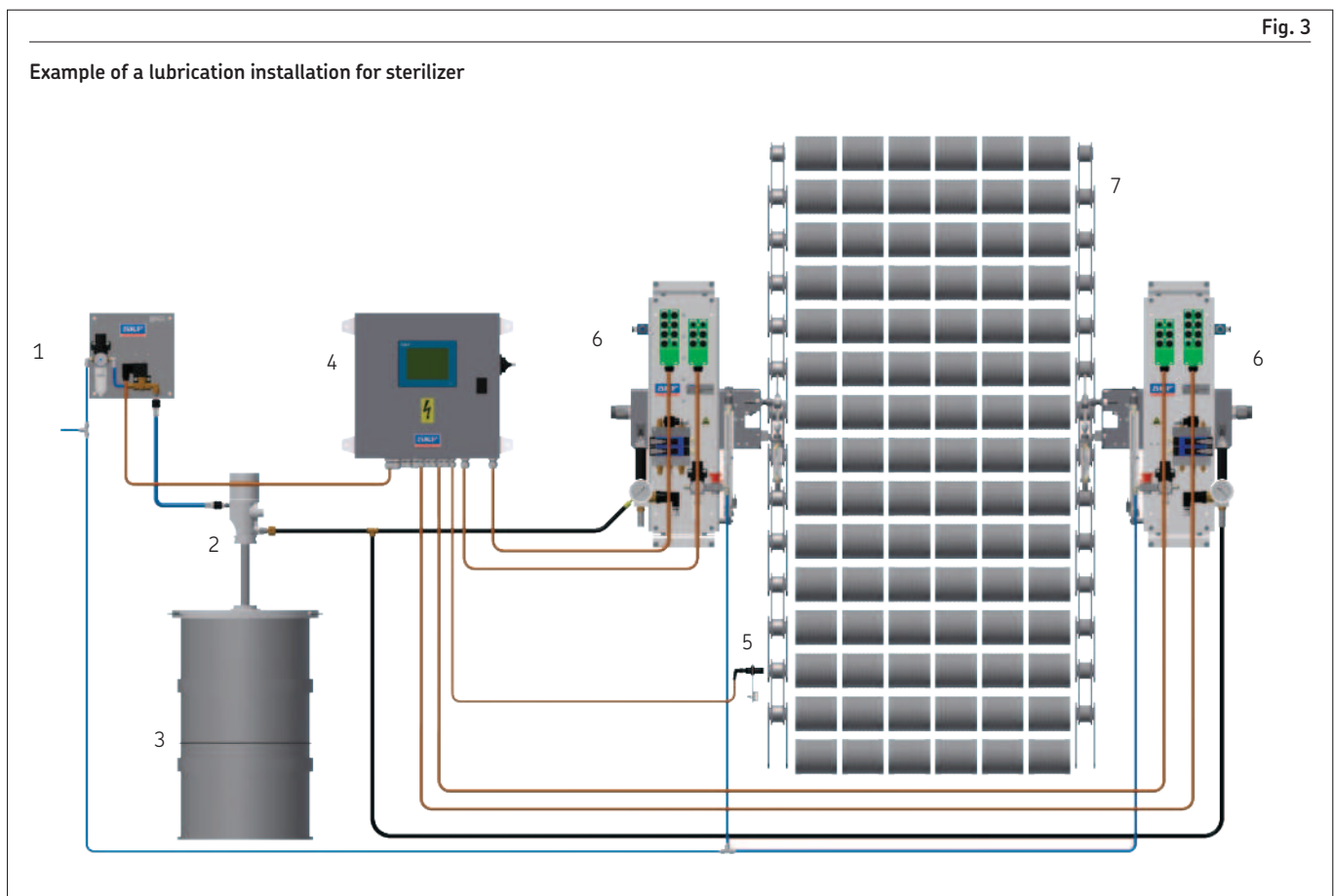
3.2 Function

3.2.1 Lubrication unit

A chain lubrication system comprises the different pneumatic, hydraulic, mechanical and electronic components necessary to an optimal lubrication. The figure beneath shows an example of a lubrication installation. It comprises the following main elements:

- Two GVP lubrication systems. They are mounted closed to the chain and they inject the lubricant directly in the chain nipples. A control unit controls and monitors them and a drum pump type PT supplies lubricant.
- A control and monitoring unit. It triggers the lubricant injection according to the signals it receives from the proximity switch. It monitors the function of the GVP system by means of the different sensors on the system. It controls also the pneumatic control unit.
- A pneumatic drum pump, type PT to supply lubricant to the GVP system. It is actuated by a pneumatic control unit.
- A pneumatic control unit to actuate the pneumatic drum pump. It is controlled by the control unit.
- A proximity switch on the chain to detect the lubrication points. It sends a corresponding signal to the control unit.

! Information
The chain lubrication system shown on this page is given as an example for a better understanding of the whole system function. Therefore it might be some differences with the delivered system.



- 1 Pneumatic control unit
- 2 Pneumatic drum pump
- 3 Lubricant drum
- 4 Control and monitoring unit
- 5 Proximity switch

- 6 GVP grease injection lubrication system
 - 7 Sterilizer conveyor
- Blue line: pneumatic line
 - Black line: grease line
 - Brown line: electric cable

3.2.2 GVP system

The function principle of the grease injection system for the lubrication of conveyor chains is more or less the same for all systems.

However some models differ from others by the type of lubrication points, the number of injection heads, etc.

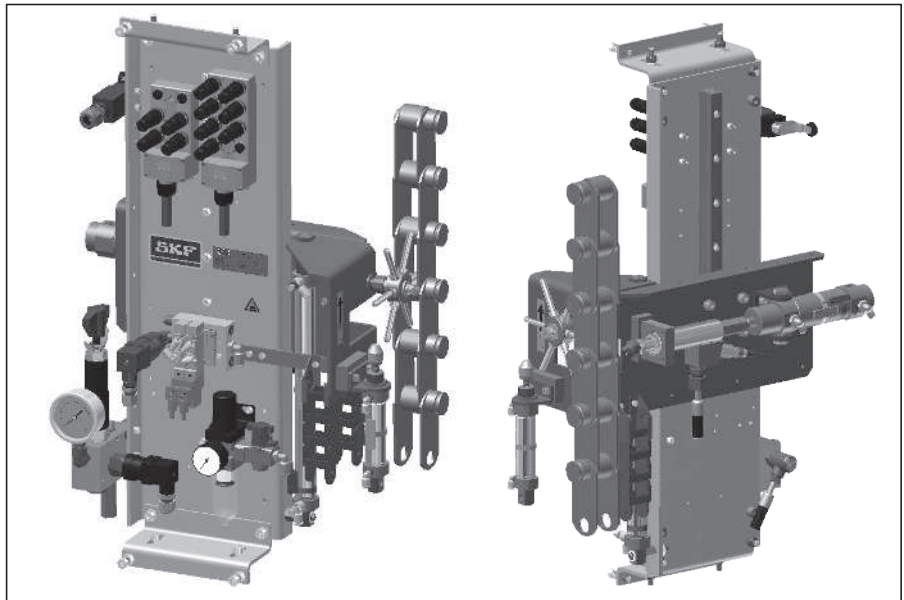
! Information

In the following description of the GVP system function the chain runs upwards.

But a sterilizer chain can also run horizontally, downwards or with a slope. The used GVP system is always design for a given application. It is therefore imperative to observe the chain running direction.

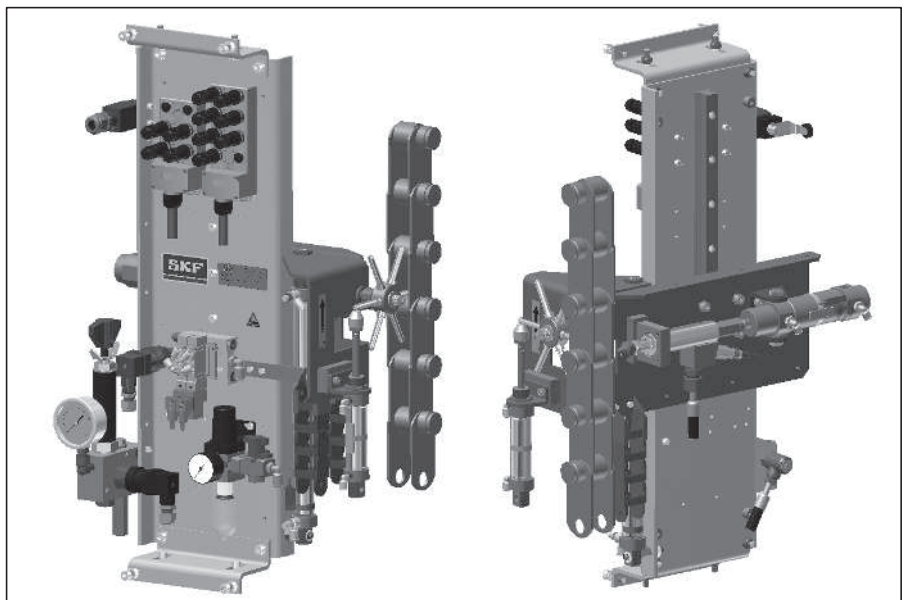
Start position

- The chain is running
- The GVP system waits
- The carriage with the injector is in its initial position
- The capstan turns freely with the chain
- No signal from the proximity switch



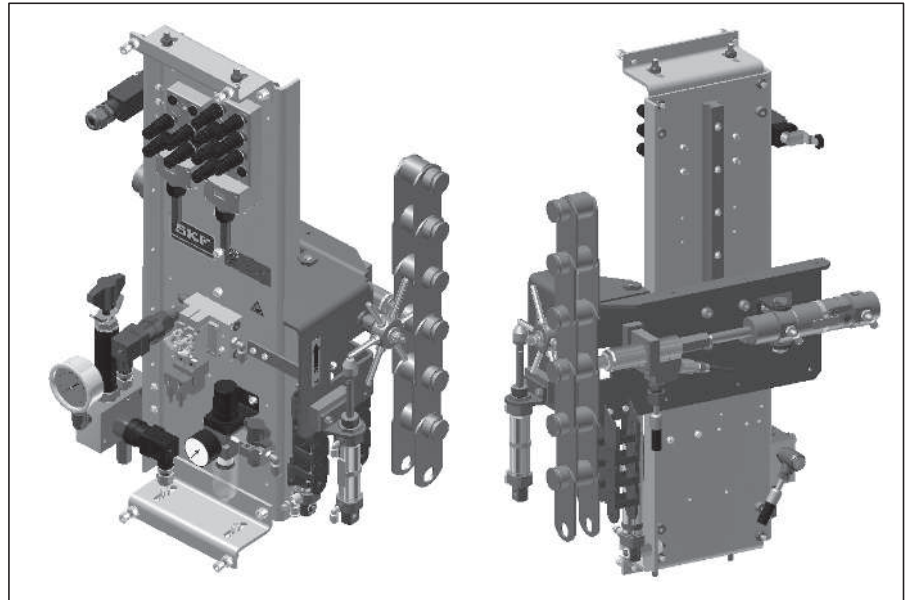
Detection of the lubrication point by the proximity switch

- The proximity switch sends a signal to the control unit of the GVP system
- The control unit triggers a lubrication
- The stop cylinder is actuated and blocks the capstan



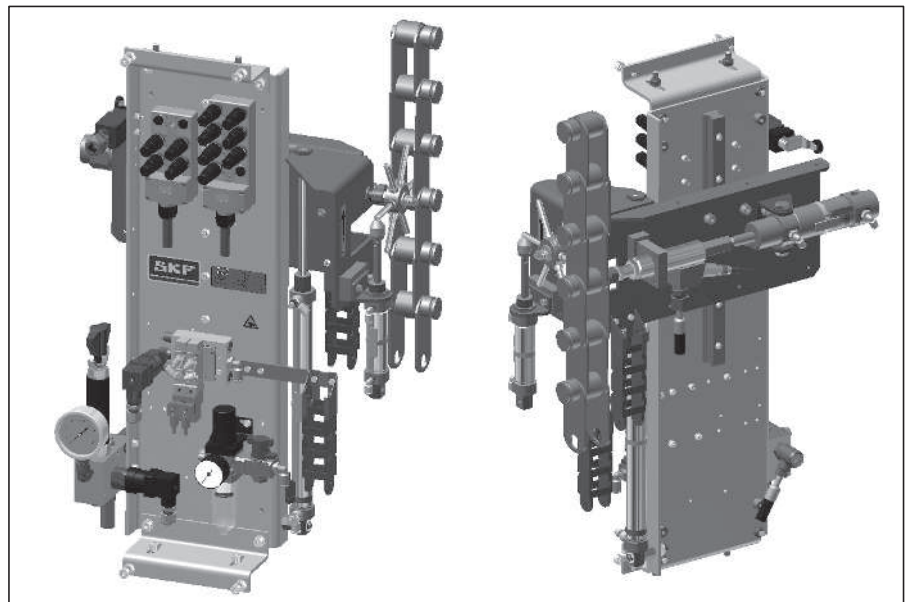
Injection phase

- The capstan is blocked by the stop
- The chain moves the carriage with the injector
- When the carriage starts, the injector cylinder is actuated
- The injector comes in contact with the roller greaser



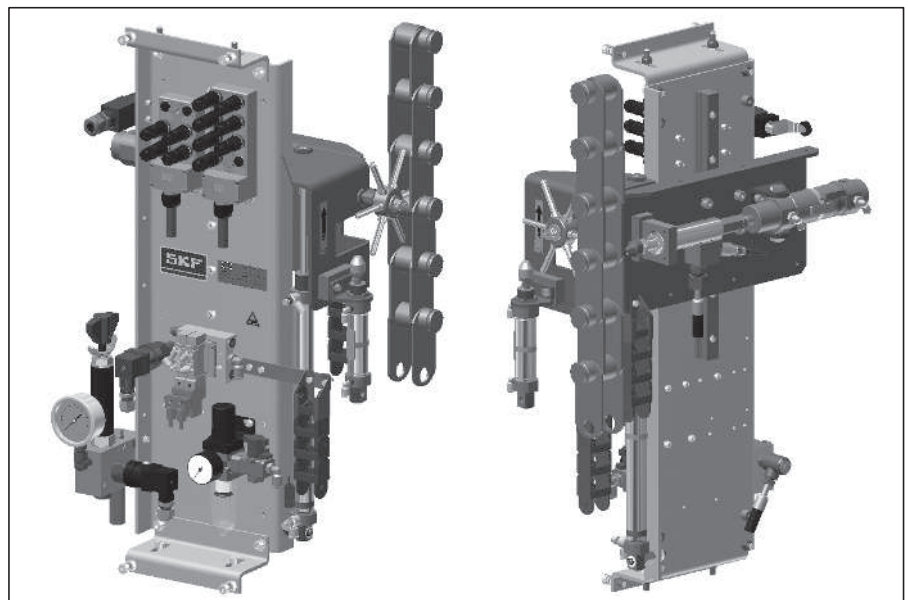
Lubricant injection

- The capstan is blocked by the stop
- The carriage with the injector moves in parallel with the chain
- The injector injects lubricant in the greaser of the roller



End of the lubrication phase

- The injection time is over
- The return of the injector cylinder is driven. The injector disengages from the greaser and comes back to its initial position
- The return of the stop cylinder is driven. The stop comes back to its initial position.
- The capstan is not blocked anymore by the stop and turns again freely with the chain
- The return of the carriage cylinder is driven. The carriage with the injector comes back to its initial position.
- When all components are back to their initial position, the GVP is waiting for the next injection



4 Installation instructions

The lubrication system described in the mounting instructions may only be installed, operated, maintained, and repaired by qualified experts. Qualified personnel are persons who have been trained, instructed, and familiarized by the user of the end product into which the system is installed. These persons are considered capable of such tasks due to their education, training, and experience with valid standards, conditions, accident prevention regulations in effect, and installation conditions. They should be able to carry out the required tasks and to recognize – and thus avoid – any dangers that might otherwise occur.

A definition of what constitutes a qualified person and who are unqualified persons are stipulated in DIN VDE 0105 and IEC 364.

Before installing/positioning the lubrication system, remove the packaging material and any transportation safety devices such as sealing plugs. Keep the packaging material until any and all problems have been clarified.

Country-specific accident prevention regulations and the operating and maintenance instructions for the operator must be observed when carrying out all installation work on machines.

- The lubrication system is mounted on the side of the chain and fixed on brackets previously fitted by the user.
- The GVP system must be mounted according to the motion direction of the chain.
- The GVP system has four fixing points.
- The injection head must be at a distance of ca. 20 mm from the grease nipple (→ fig. 4)
- The capstan finger (→ pos. 5 fig. 8) must come between the two inner plate of the chain and must be aligned with the stop head (→ pos. 6 fig. 8).

NOTE

Mounting dimensions

Please refer to the lubrication system general drawing for the mounting dimensions. This drawing is delivered with the lubrication system. If you do not have this drawing, please contact the SKF Service Centre to get it.

⚠ WARNING!

All installation, setting, maintenance and repair works on the lubrication system must be carried out only when the conveyor is off duty. Working closed to a running conveyor chain may cause operator's injuries and/or important material damages.

NOTE

Moving direction

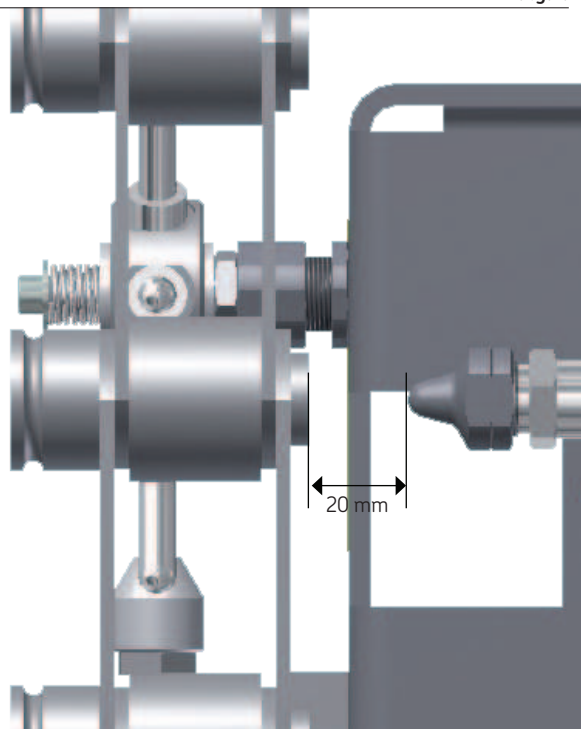
You have to take in account the moving direction of the chain when installing the lubrication system. A wrong installation of the system will lead to the destruction of the system and important damages on the chain. The moving direction is indicated with an arrow on the GVP system.

4.1 Positioning and installation

The lubrication system must be protected from vibrations but on the other hand mounted so that it is easily accessible to ensure that all further installation work can be carried out without difficulty. Ensure that there is sufficient circulating air to prevent the system from overheating. For information on the maximum admissible ambient temperature, see the technical data section.

! For the product-specific technical data on a specific lubrication system, see the relevant documentation. If you do not have access to this documentation, you can request it directly from SKF.

Fig. 4



4.2 Mechanical adjustments

⚠ CAUTION!

Adjustments to the pick-up system must only be made when the pneumatic feed is shut off and the chain stopped.

The position of the lubrication system must be mechanically adjusted to optimize the lubrication process. Several mechanical adjustments can be carried out:

4.2.1 Position of the injector

The injector must be correctly centered with regard to the lubrication point and be at a distance of 20 mm for the greaser. The position of the injector is set according to three axes (→ fig. 5).

4.2.1.1 A axis

The A axis corresponds to the 20 mm maximal distance between the injector and the greaser. Do this adjustment when installing the frame of the GVP system. It is hard to modify it later. Take all necessary measures to reach the distance.

NOTE

The intermediate supports between the GVP system and the client's machine are the client's responsibility, except if specified differently.

4.2.1.2 B axis

- Loosen the 4 locking screws (→ pos. 1 fig. 6), 2 locking screws on each side of the GVP system.
- Loosen the nuts (→ pos. 2 fig. 6)
- Screw in or off the adjustment screws (→ pos. 2 fig. 6) to position the injector with regard to the greaser.
- Tighten the nuts (→ pos. 2 fig. 6)
- When the injector is aligned with the greaser, tighten the 4 locking screws (→ pos. 1 fig. 6).

NOTE

The position setting must be carried out at the same time on both sides of the lubrication system. The adjustment of only one side of the system may cause material damages on the lubrication system (misalignment). Check the position of the injector over the whole stroke of the carriage.

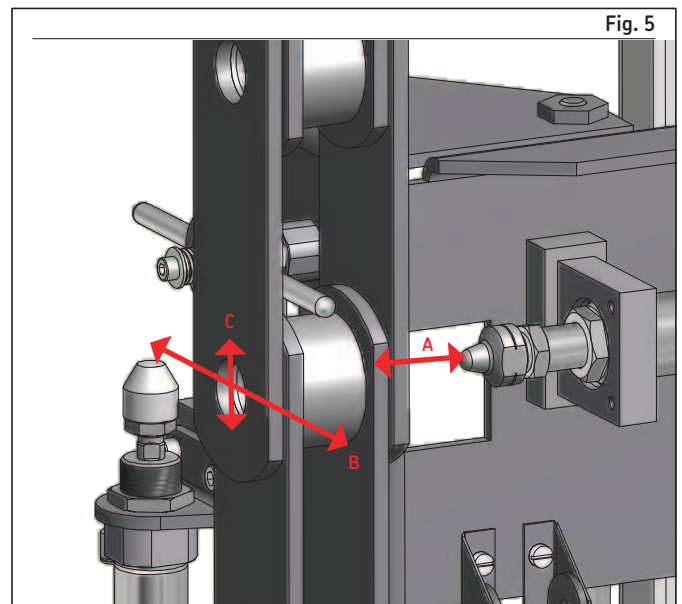


Fig. 5

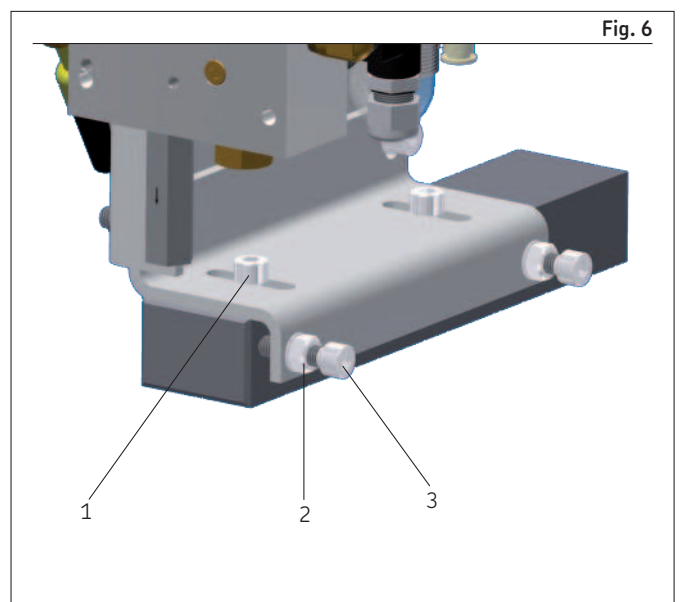
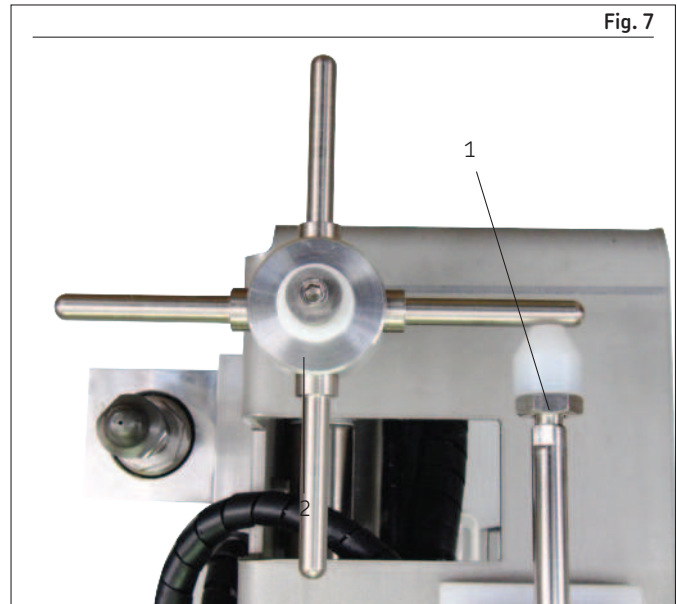


Fig. 6

4.2.1.3 C axis

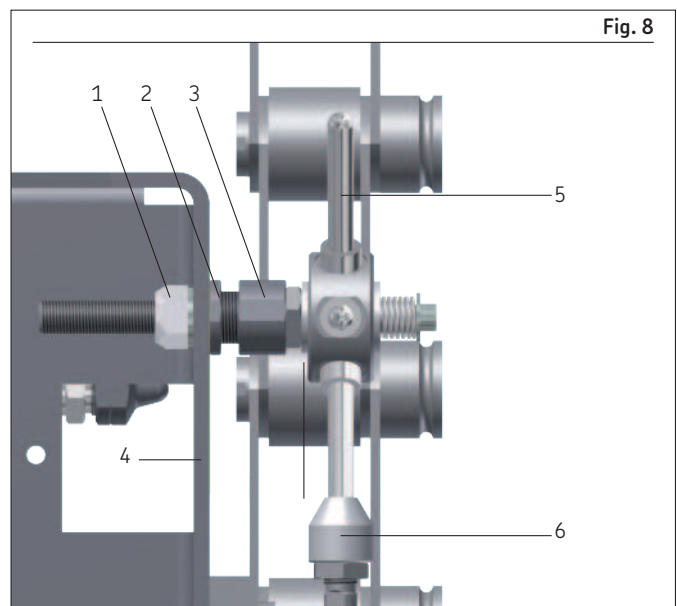
It is possible to adjust a little the position of the injector with regard to the C axis. Therefore screw on or unscrew the stop head (**→ pos. 1 fig. 7**) to slightly modify the axis of the capstan finger.



4.2.2 Position of the capstan

It is possible to adjust the position of the capstan fingers with regard to the chain inner plates, but above all with regard to the stop head (**→ fig. 8**).

- Loosen the nut **(1)**
- Loosen the threaded nut **(2)**
- Screw on or unscrew the nut **(3)** with regard to the threaded nut **(2)** to adjust the position of the capstan.
- Bring the threaded nut **(2)** in contact to the steel sheet **(4)**
- Tighten nut **(1)**



4.2 Pneumatic connection

The lubrication system must be connected to the client's compressed air network.

The compressed air quality must comply with purity class 5 defined by DIN ISO 8573-1:

- Maximum particle size: 40 µm
- Maximum particle density: 10 mg/m³
- Dew point: 7 °C
- Maximum water content : 7,800 mg/m³
- Maximum residual oil content: 25 mg/m³

The air line is directly connected to the air treatment unit (→ pos. 1 fig. 9) with a quick connector for tube OD 8 mm.

The air treatment unit comprises:

- An isolation valve (→ pos. 2 fig. 9) to shut down the air supply
- A pressure gauge (→ pos. 4 fig. 9) to monitor the pressure and an turning button (→ pos. 3 fig. 9) to adjust the pressure if necessary.
- A filter (→ pos. 5 fig. 9)

⚠ CAUTION!

The maximum primary air pressure indicated for lubrication system operation must not be exceeded.

4.3 Hydraulic connection

The lubrication system is supplied with lubricant by an external pump. Connection to the lubricant inlet with a G 3/8 connector, depth 8 (→ pos. 1 fig. 10) (without connector, threading G 1/2, depth 10).

The lubricant treatment unit comprises:

- A pressure switch (→ pos. 5 fig. 10)
- A safety valve (→ pos. 2 fig. 10)
- A pressure gauge to monitor the pressure (→ pos. 3 fig. 10)
- A pressure regulator (set and sealed at the factory) (→ pos. 4 fig. 10)

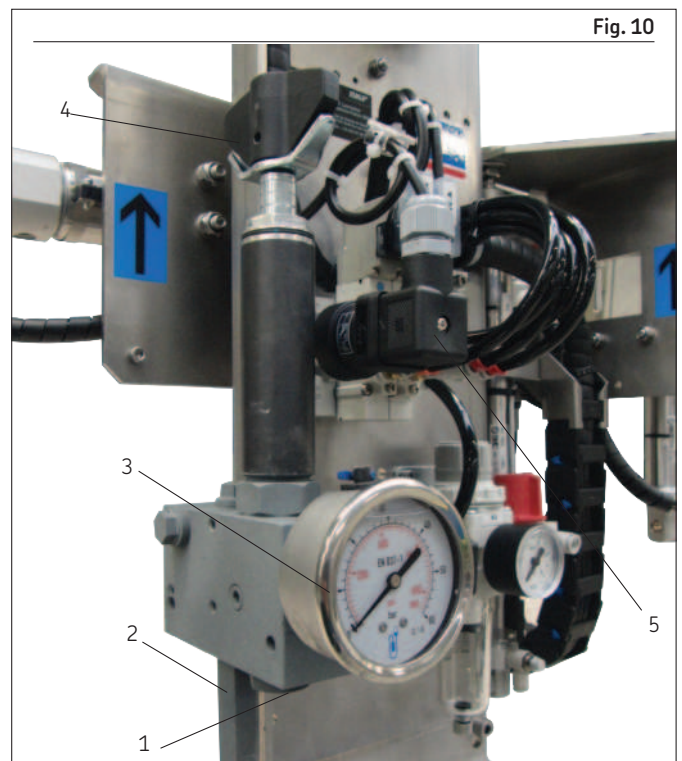
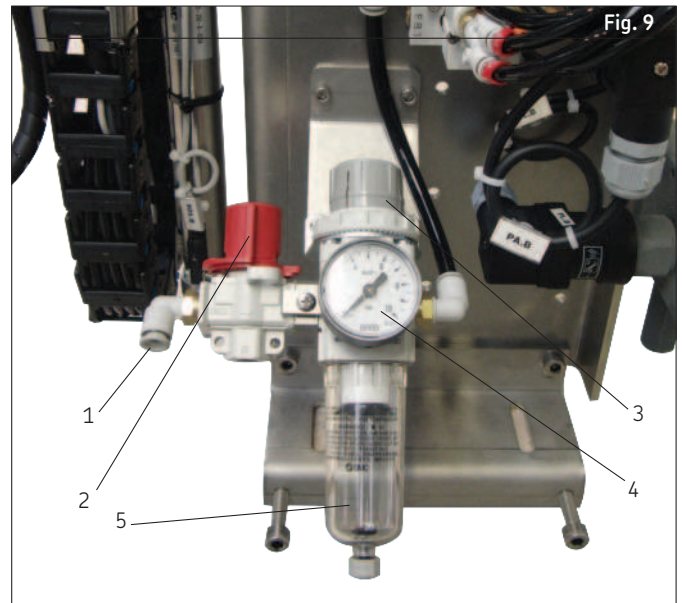
⚠ CAUTION!

The maximum lubricant pressure indicated for system operation must not be exceeded.

4.3.1 Supply pump

The lubricant supply pump must be located as close as possible to the GVP system.

In the case the pump supplies simultaneously several GVP systems, it must be located in the middle of the system to get an equal length of tubing.



4.4 Electric connection

Refer to the electrical documentation supplied with the lubrication system for information about the electrical connections for the system.

! For the product-specific electric data see the relevant documentation. If you do not have access to this documentation, you can request it directly from SKF.

⚠ WARNING!

Only qualified, instructed specialists who are authorized by the operator may install the electrical connections for the lubrication unit. The connection conditions and the local regulations (e.g. DIN, VDE) must be scrupulously respected. If systems are improperly connected, substantial material or personal damage may be the consequence.

4.5 Proximity switch

The proximity switch detects the rollers of the moving chain.

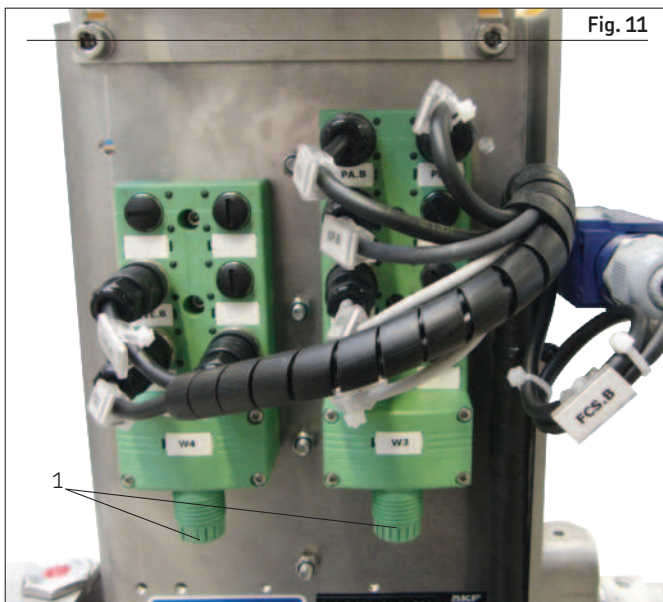
When a roller is detected the proximity switch sends a signal to the control unit of the GVP lubrication system. According to the running lubrication program, the control unit triggers or not a lubrication.

! For the product-specific technical data the proximity switch, see the relevant documentation. If you do not have access to this documentation, you can request it directly from SKF.

⚠ CAUTION!

The proximity switches may be connected only by properly qualified and instructed personnel.

Working on proximity switches under electrical voltage could lead to personal injury.



It is important to correctly position the proximity switches in relation with the lubrication point to guarantee an optimal function. The proximity switches must be perfectly positioned in the axis of the point to be detected (\rightarrow fig. 12).

Metal support

The mounting of the sensor differs if it suits or not for flush mounting in metal (\rightarrow fig. 13).

If the detector is suitable for flush mounting in metal, then no side clearance is required. But if it is not suitable for flush mounting in metal, then a side clearance is required.

Sensing distance of the proximity switch

(\rightarrow fig. 14)

Nominal sensing distance (S_n)

The rated operating distance for which the sensor is designed. It does not take into account any variations (manufacturing tolerances, temperature, voltage).

Real sensing distance (S_r)

The real sensing distance is measured at the rated voltage (U_n) and the rated ambient temperature (T_n).

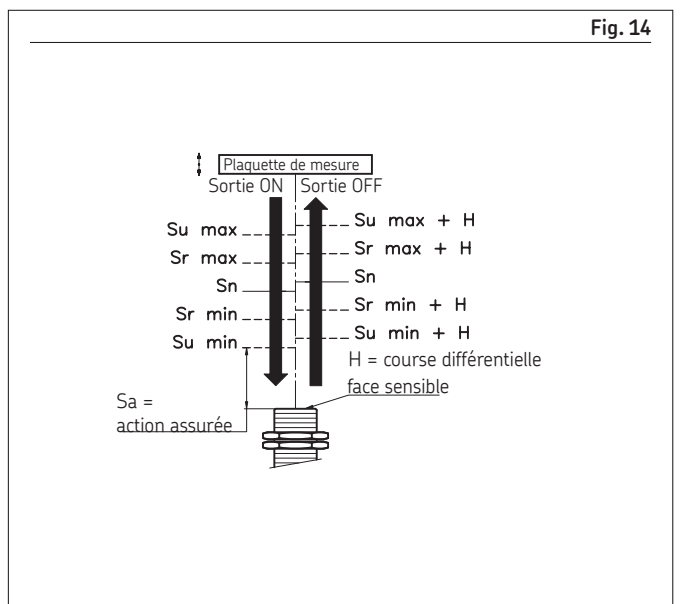
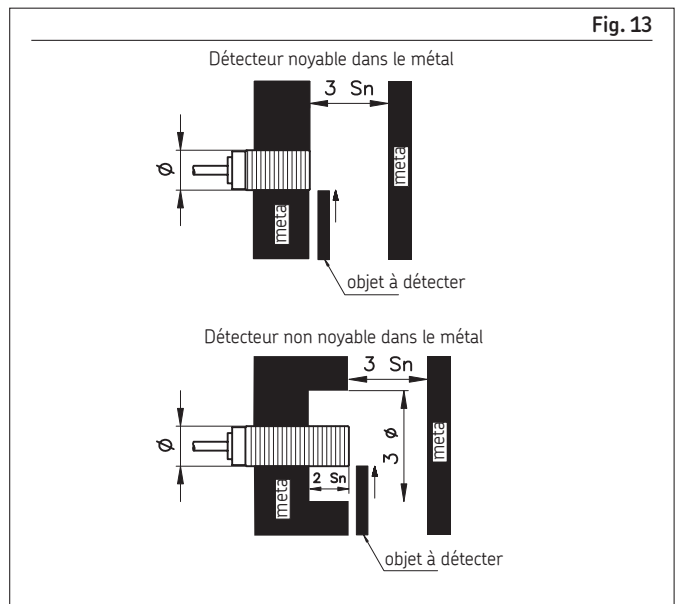
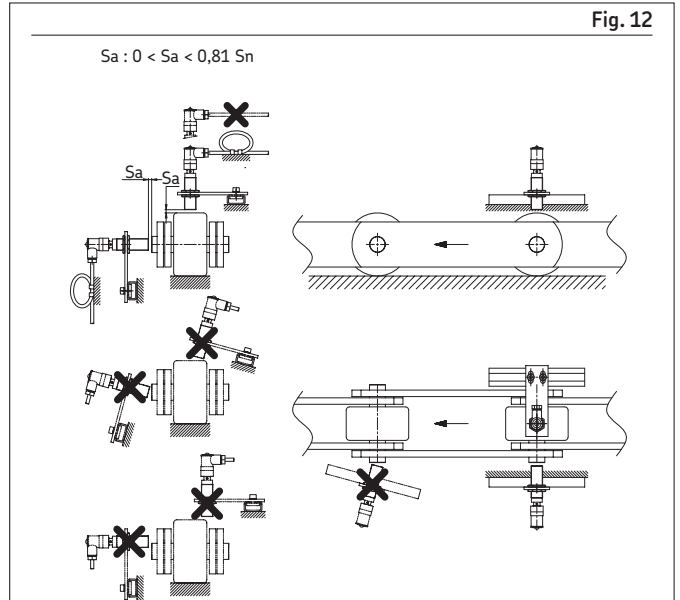
It must be between 90% and 110% of the nominal sensing distance (S_n): $0,9 S_n \leq S_r \leq 1,1 S_n$.

Usable sensing distance (S_u)

The usable sensing distance is measured at the limits of the permissible variations in the ambient temperature (T_a) and the supply voltage (U_b). It must be between 90% and 110% of the real sensing distance (S_r): $0,9 S_r \leq S_u \leq 1,1 S_r$.

Assured sensing distance (S_a).

This is the operating zone of the sensor. The assured operating distance is between 0 and 81% of the nominal sensing distance (S_n): $0 \leq S_a \leq 0,9 \times 0,9 \times S_n$



5. Transport, delivery and storage

5.1 Transport

SKF products are packaged in accordance with the regulations of the recipient country and in accordance with DIN ISO 9001. Our products must be transported with care. Products must be protected against mechanical influences such as impacts. Transport packaging must be labeled with the information 'Do not drop!'.

⚠ CAUTION!

The product must not be tipped up or dropped.

There are no restrictions relating to land, air, or sea transportation.

5.2 Delivery

Following receipt of the shipment, the product or products must be checked for damage and the shipping documents should be used to make sure that the delivery is complete. Keep the packaging material until any and all problems have been clarified.

5.3 Storage

The following conditions apply to the storage of SKF products.

5.3.1 Storage of lubrication units

- Ambient conditions: dry, dust-free environment; storage in well-ventilated, dry area
- Storage time: 24 months max.
- Permitted air humidity: < 65%
- Warehouse temperature: 10 – 40 °C
- Light: direct sunlight/UV radiation must be avoided; nearby sources of heat must be screened

5.3.2 Storage of electronic and electrical devices

- Ambient conditions: dry, dust-free environment; storage in well-ventilated, dry area

- Storage time: 24 months max.
- Permitted air humidity: < 65%
- Warehouse temperature: 10 – 40 °C
- Light: direct sunlight/UV radiation must be avoided; nearby sources of heat must be screened

5.3.3 Storage – general information

- Ensure that no dust gets into stored products by wrapping them in plastic film
- Store products on racks or pallets to protect them from damp floors
- Before placing products into storage, protect uncoated metal surfaces - and drive parts and mount surfaces in particular - from corrosion using long-term corrosion protection.

6. Activation

6.1 General

Before starting the lubrication unit, check that all outer connections (reservoir, air supply, electric connections, etc.) have been well mounted and tightened.

- Check that the lubricant feed device is drained.

⚠ CAUTION!

Always respect the equipment manufacturer's recommendations concerning which lubricant to use.

⚠ CAUTION!

Only use a clean lubricant. Soiled lubricants can cause major defects in the system.

⚠ CAUTION!

Different lubricants must not be mixed together. Doing so can cause damage and require extensive cleaning of the lubrication system. To prevent any risk of error, it is recommended to clearly identify the lubricant used on the reservoir.

⚠ CAUTION!

Depending on the nature of the lubricant used, the user should wear protective equipment such as glasses, a mask and gloves. For further information please consult the technical file and the safety data sheet for the lubricant used.

⚠ WARNING!

Remove your hands quickly.

- Power up the control unit.
- Pass a metallic object in front of the optional **DOC** origin sensor (option): the LED should light up
- Check that the following LEDs light up:
 - return cylinder sensor **S01**
 - injection cylinder sensor **S02**
- Reset the control unit.

6.2.2 Function of the proximity switch

- Check the detection system
- Reconnect the **EVE** solenoid valve
- Pass a metal object in front of the roller sensor **D1** : the LED on the roller sensor **D1** and the LED on the connector of the **EVE** solenoid valve should light up and the roller pick-up systems should be deployed.
- Smoothly push the carriage of the GVP. The LED on the connector of the **EVG** solenoid valve should light up and the LED on the connector of the **EVE** solenoid valve remains lit.

⚠ WARNING!

Remove your hands quickly.

- After the lubrication phase the pick-up systems retract and the carriages return to their initial position.
- Close the air valve.

The injection time corresponds to the time of contact between the injection head and the lubrication point. This interval is programmed using the control unit (factory setting: 0,5 s).

6.2 Commissioning

When activating the lubrication system, you can use the hydro-pneumatic diagram delivered with the system to identify the different elements.

6.2.1 Activation - conveyor stopped

- Remove the protective cover.
- Remove the connectors on the injector control solenoid valves for the **EVG** and **EVE**.
- Check if the end switch is not on position OFF; otherwise pull to get on position ON.
- If a control switch is connected, disconnect it from the control unit.
- Open the air valve.

6.2.3 Activation - Conveyor running

- Check that no parts touch the chain when it is moving. If this is the case, take the necessary measures to adjust the system position.
- Reconnect the **EVG** solenoid valve
- Reposition the protective cover in place.
- Open the air valve.

The system should restart automatically. If the client has not configured the control unit to their own specifications, the GVP system operates according to the original factory settings: roller lubrication cycle = 1 000 lubrication pulses.

6.3 Modification of the injector metered volume

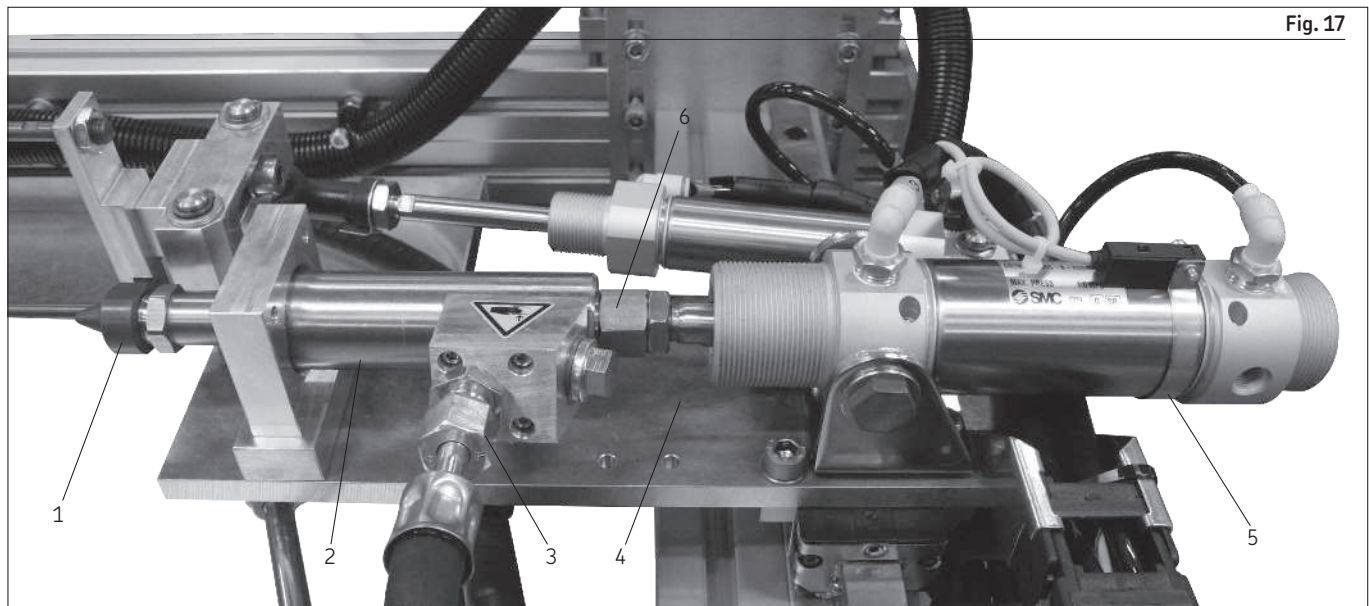
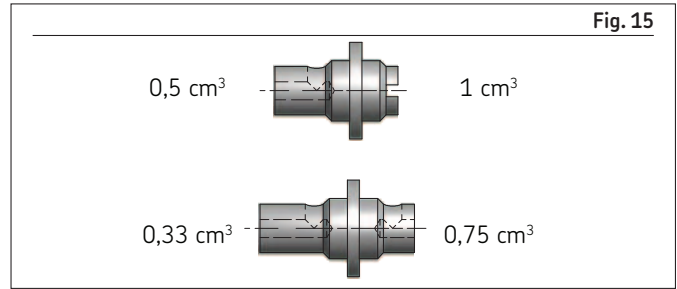
The GVP lubrication system is delivered with a fixed metered volume. It is possible to modify later this metered volume. Four different metered volumes are available: 0,33 ; 0,5 ; 0,75 or 1 cm³/stroke.

The metered volume is adjusted by means of reversible metering stops. They modify the stroke of the metering piston of the injector, thus the metered volume. Each injector has two reversible metering stops (→ fig. 15), one is mounted in the injector, the other delivered separately.

NOTE

A number of washers screwed on the injector indicate the metered volume of the GVP system (→ fig. 16). Therefore change the number of washers when modifying the metered volume.

- 1 washer = 0,33 cm³
- 2 washers = 0,5 cm³
- 3 washers = 0,75 cm³
- 4 washers = 1 cm³



Injector GVP system

- 1 Injection head
- 2 Injector
- 3 Lubricant inlet
- 4 Injector carriage
- 5 Injector cylinder
- 6 Locking nut between cylinder and injector

⚠ CAUTION!

The lubrication system GVP must be disconnected from the power supply and not under pressure when modifying the metered volume. Therefore turn off the power supply and depressurize the system.

- Check the GVP unit is off and the air supply closed.
- Loosen the locking nut with an open end wrench (H.19) (**→ 1 fig. 18**) while holding the injector and remove the cylinder from the injector.

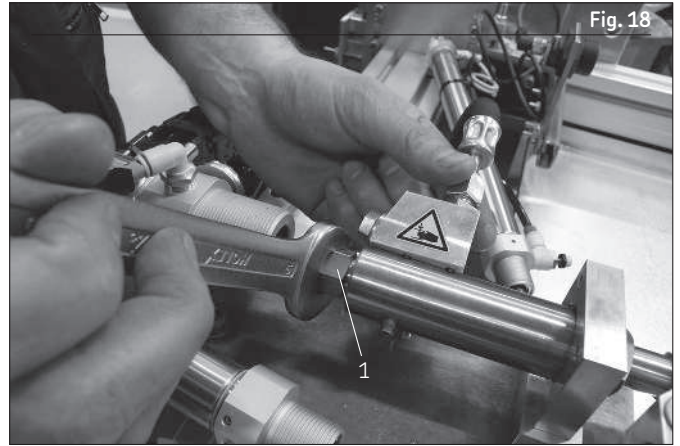
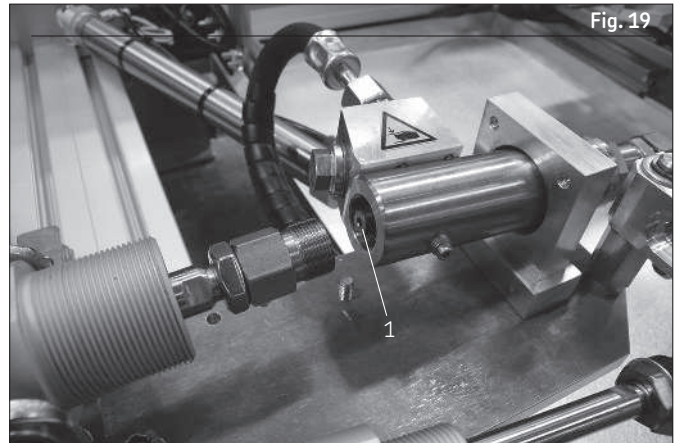


Fig. 19



⚠ CAUTION!

Lubricant might flow away when removing the cylinder from the injector.

- Once it is removed you can see the metering stop in the injector (**→ 1 fig. 19**)
- Remove the metering stop (**→ 1 fig. 20**) with a pliers
- Put the selected metering stop for the new metering volume in the cylinder. The side of the stop for the metering volume must point towards the injector.
- Put the O-ring $\varnothing 10 \times 1$ (**→ 2 fig. 21**) on the metering stop (**→ 1 fig. 21**)
- Insert the cylinder head in the injector
- Tighten the locking nut

Fig. 20

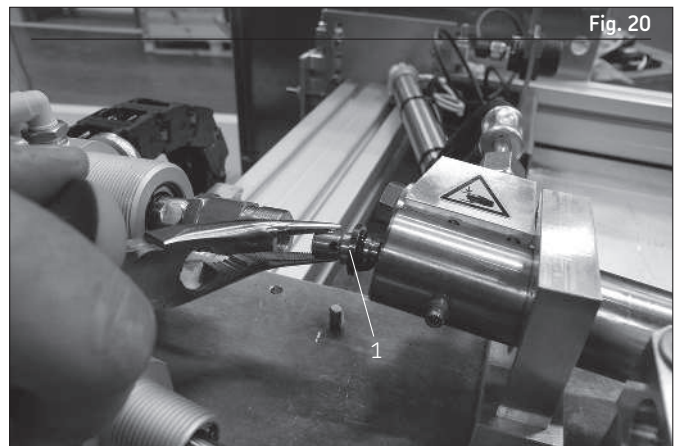
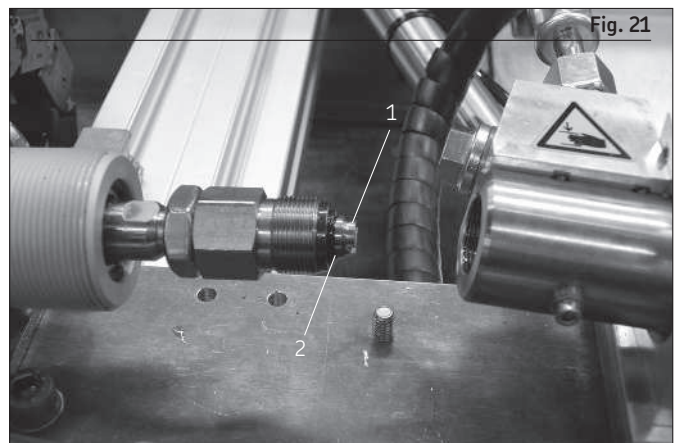


Fig. 21



6.4.2 Lubrication system bleeding

NOTE

The supply system shown here to describe how to bleed the lubrication system is given as example. This is a pneumatic drum pump controlled by an pneumatic control unit. According to the application, the supply system may be different. For further information, please refer to the technical documentation delivered with the lubricant supply system.

Bleed first the lubricant supply pump before bleeding the lubrication system.

- Check the pump is correctly mounted on the lubricant drum.
- Open the bleed valve (→ 1 fig. 22) of the pump.
- Use the manual control of the solenoid valve (→ 1 fig. 23) of the air control unit to force the operation of the pump
- Wait until lubricant comes out of the bleed valve without air bubbles.
- Stop the pump

In the case the pump supplies several GVP units, each unit must be bled.

- Disconnect the supply line from the lubricant treatment unit (→ 2 fig. 24) of the GVP unit.
- Use the manual control of the solenoid valve (→ 1 fig. 23) of the air control unit to force the operation of the pump
- Wait until lubricant comes out of the supply line without air bubbles.
- Stop the pump
- Connect the supply line to the lubricant treatment unit (→ 2 fig. 24)

At the end of the bleeding operation, the lubricant pressure gauge (→ 3 fig. 24) on the GVP unit must indicate a pressure between 20 and max. 25 bar. If necessary adjust the pressure with the lubricant regulator (→ 1 fig. 24) on the GVP unit.

⚠ WARNING!

The lubricant inlet pressure for a GVP lubrication system must not exceed 25 bar.

Fig. 22

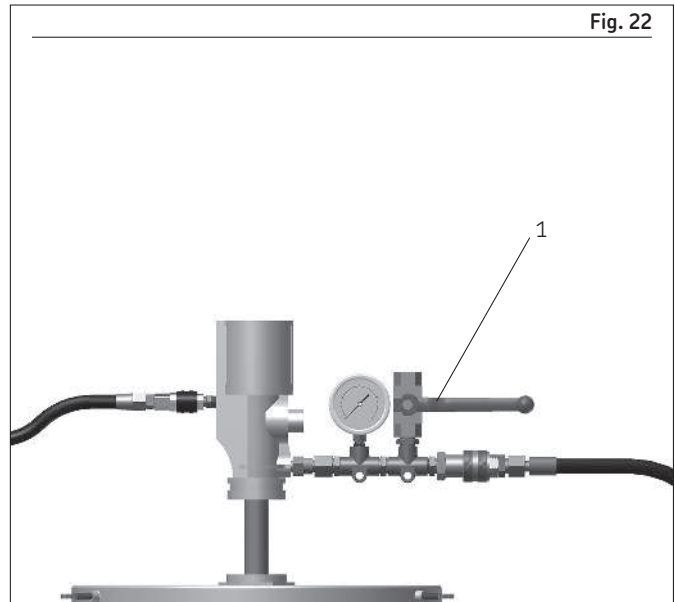


Fig. 23

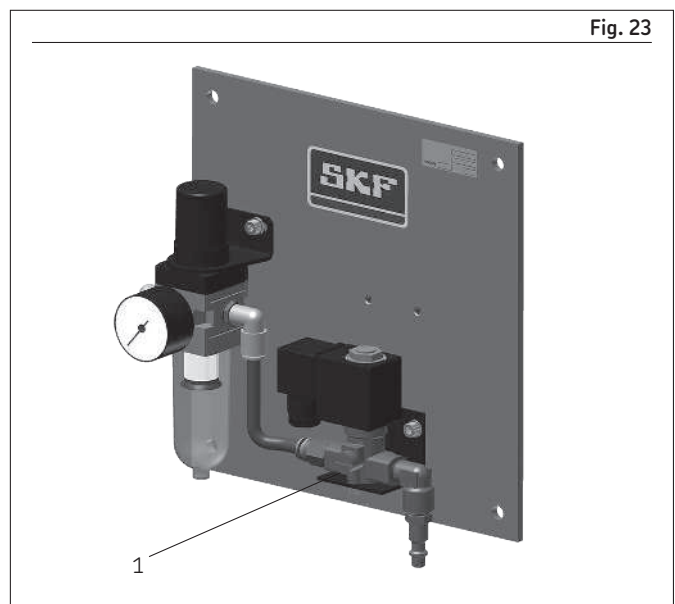
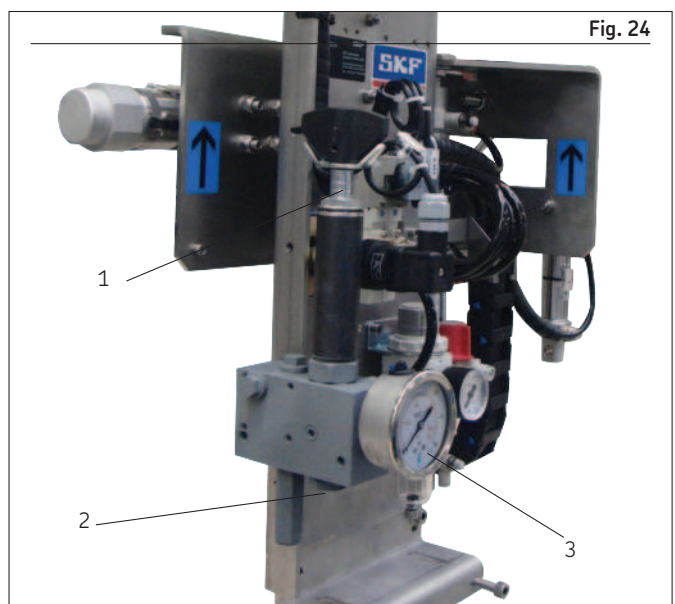


Fig. 24



7. Shutdown

7.1 Temporary shutdown

You can temporarily shut down the described product by disconnecting the electrical, pneumatic, and/or hydraulic supply connections. For more information, see the section General information in this manual.

If you wish to shut down the product temporarily, refer also to the instructions in the section Transport, delivery, and storage of this manual.

When placing the product back into operation, refer to the information in the sections Installation and Commissioning of this manual.

7.2 Permanent shutdown

All country specific legal guidelines and legislation on the disposal of contaminated equipment must be observed when shutting down the product for the final time.

⚠ CAUTION!

Lubricants can contaminate the ground and watercourses. Lubricants must be used and disposed of in compliance with the rules. Instructions and local regulations must be observed when handling lubricants.

8. Maintenance

⚠ WARNING!

Working on products that have not been disconnected from the power supply can cause serious injury or death to persons. Installation, maintenance, and repair work may only be carried out by qualified experts on a product that is not connected to a power supply. The supply voltage must be turned off before any product components are opened.

⚠ WARNING!

The described product may be under pressure when it is being operated. The product must therefore be depressurized before starting installation, maintenance, or repair work and before making any changes to the system.

SKF products are low-maintenance. However, to ensure that they function properly and to avoid risks right from the startup, all joints and connections should be checked to make sure that they are properly fitted.

The system can also be taken back by SKF for disposal if the costs are covered.

Table 1

GVP system maintenance		
Elements	Frequency	Instructions/Observations
Lubrication system	6 months	On the AEP3 control unit, initiate an automatic greasing cycle to verify the movements.
Cylinders	6 months	Visual inspection (seals) and acoustic inspection (leaks)
Injector	monthly	Check condition of injection nozzle
Lines	6 months	Visual inspection (seals) and acoustic inspection (leaks)
Air filters	monthly	Check state of cleanliness
Reservoir	According to frequency of lubrication	Lubricant level monitoring Refill the reservoir if necessary.
Linear guides	6 months	Permanently lubricated Check operating condition
Pick-up system	6 months	Check the condition of rollers (traces of wear)

9. Failures

Table 3 gives an overview of possible malfunctions and their causes. If you are unable to rectify the malfunction, please contact SKF Service Center.

⚠ WARNING!
Working on products that have not been disconnected from the power supply can cause serious injury or death to persons. Installation, maintenance, and repair work may only be carried out by qualified experts on products that are not connected to a power supply. The supply voltage must be turned off before any product components are opened.

! Note
You must not dismantle the product or parts of the product during the warranty period. Doing so invalidates all warranty claims.
All other work relating to installation, maintenance, and repair must only be carried out by SKF Service.
Only original SKF spare parts may be used. It is prohibited for the operator to make alterations to the product or to use non original spare parts and resources.

⚠ WARNING!
Centralized lubrication systems are under pressure when they are being operated. Centralized lubrication systems must therefore be depressurized before starting installation, maintenance, or repair work and before making any changes to the system.

Table 3

Failure analysis and remedy

Problems	Possible cause	Remedy
No lubricant discharged from injector	Problem with connection	Check the leaktight seal on the line and the connectors
	Minimum lubricant level for the feed pump reached	Check the lubricant level in the feed pump and refill if necessary
A piston is not working	No pneumatic feed	Check the connection on the pneumatic feed Check the pneumatic pressure and adjust if necessary
	Defective solenoid valve	Check the solenoid valve is functioning correctly and if necessary replace it.
	Defective sensor	Check the sensor is functioning correctly and replace if necessary
The carriage is blocked	Defective piston	Check the piston functions correctly
	Mechanical blockage	Manually move the carriage to check that no external elements are blocking it. Remove any foreign element that could prevent the carriage from working correctly. Check that the rail and the linear bearing guide function correctly.
No pressure in the system	Zero pneumatic pressure	Check that the pneumatic feed valve is open and open if necessary. Check the pneumatic pressure and adjust if necessary
Lubricant leak on the roller nipples	Incorrect head-nipple alignment Deformed or damaged nipples on rollers	Check the alignment and make adjustments as necessary Replace the nipples
No lubrication	Nipple blocked (old conveyor or unit in extreme temperatures)	Clean or replace the nipples Check the other nipples at the same time.
	Injector filled incorrectly.	Check that the grease has no air bubbles Check that the feed pump and the injector function correctly.

10. Technical data

Table 4

Technical data

GVP-S-051-01 lubrication system

Pump

Air feed pressure	5 to 7 bar
Lubricant inlet pressure (injector inlet)	20 to 25 bar
Injection volume	0,33 to 1 cm ³
Presetting	1 cm ³
Operating temperature	5 to 45°C
Lubricant	Grease, NLGI grade 2
Chain max. speed	10 m/min

11. Spare parts

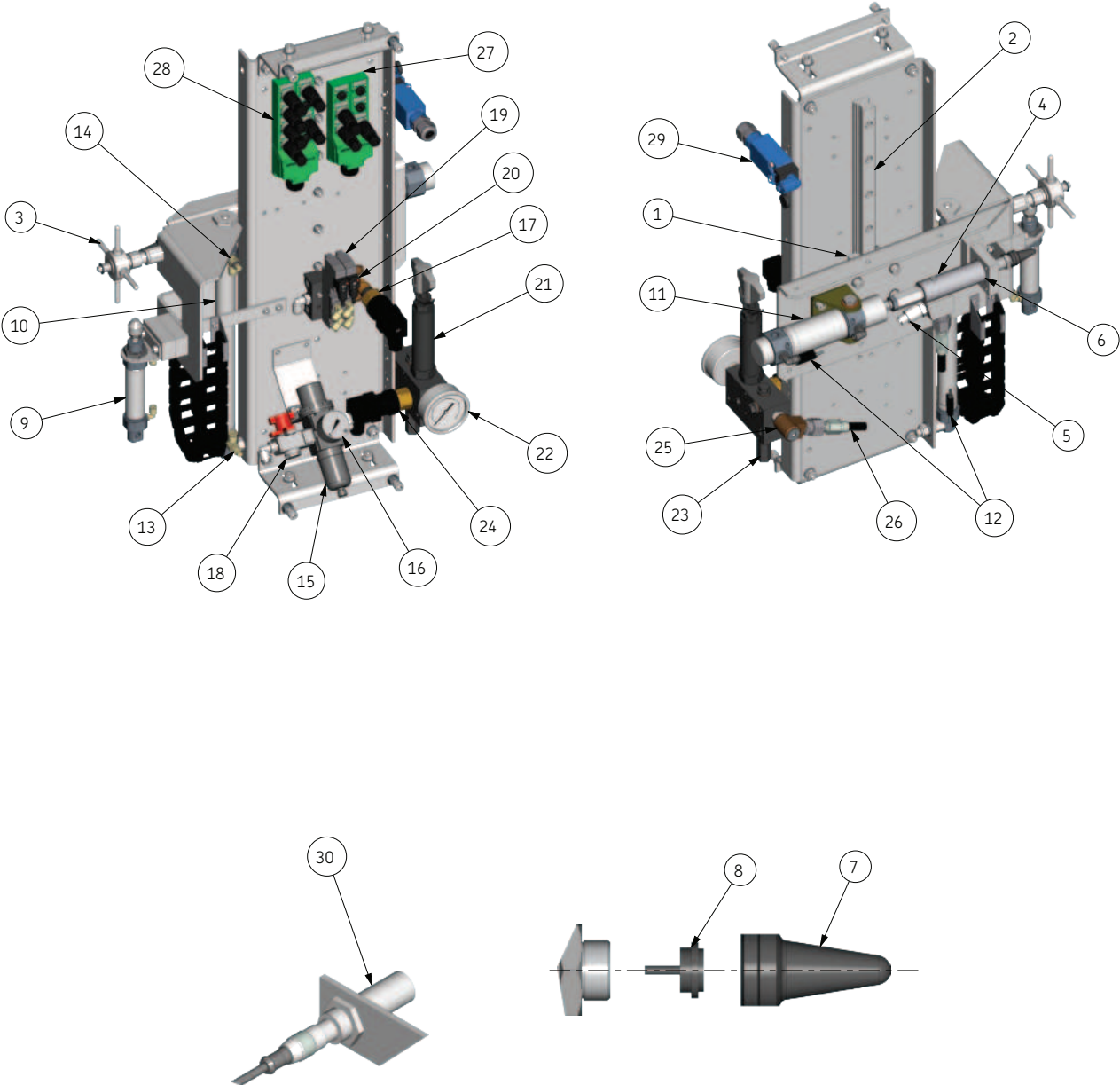
Note
Only original SKF spare parts may be used. It is prohibited for the operator to make alterations to the product or to use non original spare parts and resources.

Table 5

List of spare parts

Position	Qty	Form number	Designation
1	1	AC-4556	Linear ball guide, stainless steel, size 25
2	1	AC-5154356	Rail, stainless steel, size 25, length 356 mm
3	4	GVP335I-38	Capstan finger, stainless steel, length 38
4	1	GVP1400-11	Grease injector
5	1	AC.4211	Analog pressure sensor 4-20mA
6	1	GVP900	O-ring for injector
7	1	GVP441	Injection nozzle, No. 8
8	1	GVP418	Ball pusher for injector
9	1	AC.3731.1	Pneumatic cylinder Ø 25, stroke 50 mm
10	1	AC.3732.1	Pneumatic cylinder Ø 25, stroke 250 mm
11	1	AC.4174.1	Pneumatic cylinder Ø 50, stroke 50 mm
12	2	AC.4197	Magnetic solid state switch
13	1	AC.4202.1	Flow regulating valve (exhaust)
14	1	AC.4203.1	Flow regulating valve (inlet)
15	1	AC.4199	Filter regulator 0,5 to 8,5 bar
16	1	AC.2804	Manometer 0 to 10 bar
17	1	AC-4261-3.5B	Pressure switch, set at 3,5 bar (air circuit)
18	1	AC.4200	Valve module
19	2	AC.4193+924	Solenoid valve 5/2, single solenoid, 24 V DC
20	2	AC.4194+924	Connector, size 15, 24 V DC
21	1	AC-4305	Grease pressure reducer (20 bar)
22	1	UH2801.08	Manometer 0 to 60 bar
23	1	HK030.30R	Safety valve, set à 30 bar
24	1	AC-4261-12B	Pressure switch, set at 12 bar (grease circuit)
25	1	RT200-GVP	Swiveling connector
26	0,5	982-750-111	Hose HP (by meter)
27	1	AC-4383-6	Connection block, 6 × M12 female
28	2	AC-4383-8	Connection block, 8 × M12 female
29	1	AC-4344-1	Limit switch
30	1	SY.9518.7	Inductive proximity switch Ø18 (only on GVP-S-051-01-D+924)

Spare parts GVP-S-051-01



! **Important information on product usage**
SKF and Lincoln lubrication systems or their components are not approved for use with gases, liquefied gases, pressurized gases in solution and fluids with a vapor pressure exceeding normal atmospheric pressure (1 013 mbar) by more than 0,5 bar at their maximum permissible temperature.

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